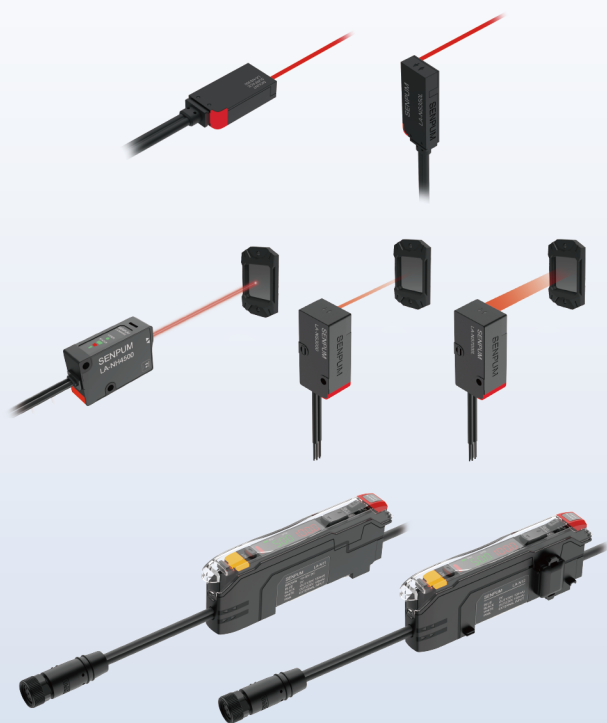


# High-Precision Digital Laser Sensor LA-N Series



EtherCAT<sup>®</sup> RS-232C / RS-485 PROFIBUS<sup>®</sup>  
EtherNet/IP<sup>™</sup> Ethernet (TCP/IP)



Ask SENPUM

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Fast Delivery Standard Models



Most products are in stock. Upon receiving your order, we will arrange prompt shipment to minimize your downtime-related costs and losses.



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LINE

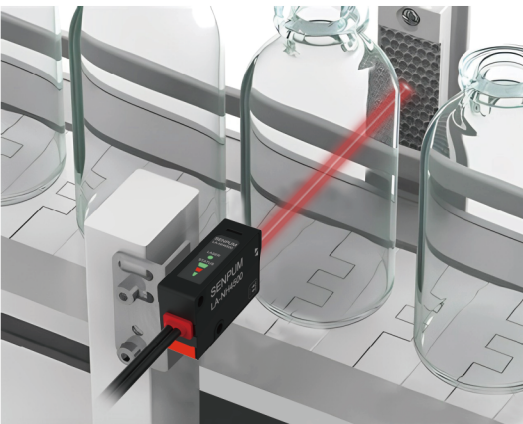
## Long distance detection eliminates mounting constraints

Easy alignment depending on workpiece and mounting conditions.



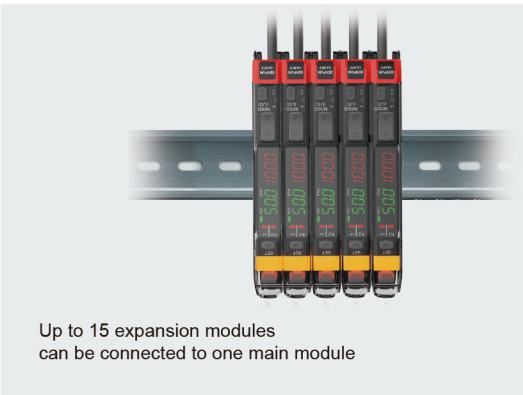
## Beam remains constant, laser can be easily detected through small gaps

Detection of bottles on filling machines.



## Stability of anti-tampering function, multiple units can be added

Maximum of 16 units.

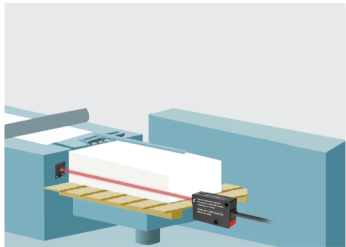


## Multiple sensing heads are available

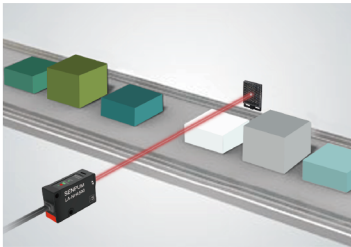
Reflective type, side-emitting reflective type, retroreflective type.

\* For more product features, please contact a SENPUM sales engineer.

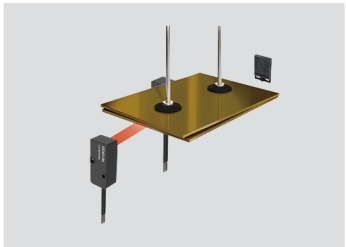
Applications



Detect the stop position of the material rack



Stable detection independent of background color



Detect the overlap of two printed circuit boards

Product List

Reflective Sensor Head

| Type                          | Appearance | Detection distance (mm)          |                                       | Spot size                                       | Model     |
|-------------------------------|------------|----------------------------------|---------------------------------------|-------------------------------------------------|-----------|
| Reflective type               |            | HSP: 150<br>MSP: 200<br>LSP: 300 | SUPER: 400<br>ULTRA: 500<br>MEGA: 600 | Approx. $\Phi 2.0$ mm                           | LA-NS350  |
| Side-emitting reflective type |            | HSP: 120<br>MSP: 160<br>LSP: 240 | SUPER: 320<br>ULTRA: 400<br>MEGA: 480 |                                                 | LA-NS350L |
| Reflective type               |            | HSP: 100<br>MSP: 150<br>LSP: 300 | SUPER: 450<br>ULTRA: 600<br>MEGA: 750 | Approx. $\Phi 1.5$ mm<br>(at a distance of 1 m) | LA-NT750  |

Retroreflective Sensor Head

| Type                 | Appearance | Detection distance (m)       |                                   | Spot size                                       | Model      |
|----------------------|------------|------------------------------|-----------------------------------|-------------------------------------------------|------------|
| Retroreflective type |            | HSP: 2.5<br>MSP: 4<br>LSP: 6 | SUPER: 7<br>ULTRA: 8<br>MEGA: 10  | Approx. $\Phi 1.5$ mm<br>(at a distance of 1 m) | LA-NH4500  |
|                      |            | HSP: -<br>MSP: 0.7<br>LSP: 2 | SUPER: 3.5<br>ULTRA: 5<br>MEGA: 6 | Approx. 2 x 2 mm<br>(at 500 mm or closer)       | LA-NS3000  |
|                      |            | HSP: -<br>MSP: 2.5<br>LSP: 5 | SUPER: 8<br>ULTRA: 10<br>MEGA: 12 | Approx. 2 x 10 mm<br>(at 500 mm or closer)      | LA-NS7000L |

Amplifier

| Appearance                                                                                              | Control output | External input | Input method | Model   |
|---------------------------------------------------------------------------------------------------------|----------------|----------------|--------------|---------|
| <br>Main module      | 2              | 1              | NPN          | LA-N11N |
| <br>Expansion module |                |                | PNP          | LA-N11P |
|                                                                                                         |                |                | NPN/PNP      | LA-N11  |
|                                                                                                         |                |                | NPN          | LA-N12N |
|                                                                                                         |                |                | PNP          | LA-N12P |
| NPN/PNP                                                                                                 |                |                | LA-N12       |         |

Bracket (sold separately)

| Appearance | Compatible sensor model | Model     |
|------------|-------------------------|-----------|
|            | LA-NS350 / LA-NS350L    | OW-LAN001 |
|            | LA-NT750 / LA-NH4500    | OW-LAN002 |
|            | LA-NS3000 / LA-NS7000L  | OW-LAN003 |
|            |                         | OW-LAN004 |
|            |                         | OW-LAN005 |

Reflective Tape (sold separately)

| Appearance | Model   | Appearance | Model  |
|------------|---------|------------|--------|
|            | N-1010  |            | N-2525 |
|            | N-1020  |            | N-5015 |
|            | N-10100 |            | N-5050 |
|            | N-10250 | —          | —      |

Reflector

| Appearance | Model |
|------------|-------|
|            | N-6L  |
|            | N-7   |

Fiber Optic Sensors  
Photoelectric Sensors  
Color Sensors

Laser Sensors

Proximity Sensors  
Precision Contact Sensors  
Area Sensors/  
Safety Light Curtains  
Laser Scanners  
Digital Contact Sensors  
Laser Displacement Sensors  
Laser Micrometers  
Confocal Displacement Sensors  
Barcode Readers  
AI Vision Sensors

RFID  
Infrared Temperature Sensors  
Pressure Sensors  
Flow Sensors

Magnetic Sensors  
Ultrasonic Sensors  
Magnetic Scales  
Static Eliminators



LA2-ZB

LA-ZB

LO-Z

LA-ZH

LA-X

LA-N

LA-H

LA2-S

LA3-P

LA-MR

LA-T

Laser Sensors

Fiber Optic Sensors

Photoelectric Sensors

Color Sensors

Laser Sensors

Proximity Sensors

Precision Contact Sensors

Area Sensors/  
Safety Light Curtains

Laser Scanners

Digital Contact Sensors

Laser Displacemen  
Sensors

Laser Micrometers

Confocal Displacement  
Sensors

Barcode Readers

AI Vision Sensors

RFID

Infrared Temperature  
Sensors

Pressure Sensors

Flow Sensors

Magnetic Sensors

Ultrasonic Sensors

Magnetic Scales

Static Eliminators



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0473

LA-N

High-Precision Digital Laser Sensor

Network Communication Unit

| Appearance                                                                        | Network                  | Model          |
|-----------------------------------------------------------------------------------|--------------------------|----------------|
|  | <b>EtherCAT</b>          | <b>OW-EC2A</b> |
|  | <b>PROFINET</b>          | <b>OW-PN2</b>  |
|  | <b>Ethernet (TCP/IP)</b> | <b>OW-EN2</b>  |
|  | <b>EtherNet/IP™</b>      | <b>OW-EP2</b>  |
|  | <b>RS-232C / RS-485</b>  | <b>OW-RS1A</b> |

Specifications

Reflective Sensor Head

| Type                          | Reflective type                                                                       | Side-emitting reflective type | Reflective type                                                                                                                                               |
|-------------------------------|---------------------------------------------------------------------------------------|-------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Model                         | <b>LA-NS350</b>                                                                       | <b>LA-NS350L</b>              | <b>LA-NT750</b>                                                                                                                                               |
| Light source                  | Red laser (wavelength 650 nm)                                                         |                               | Red laser (wavelength 640 nm)                                                                                                                                 |
| Laser class                   | IEC/JIS (class1)                                                                      |                               |                                                                                                                                                               |
| Beam spot size                | Approx. Φ2.0 mm                                                                       |                               | Approx. Φ1.5 mm (at a distance of 1 m)                                                                                                                        |
| Detection distance (mm)*      | HSP: 150                                                                              | HSP: 120                      | HSP: 100                                                                                                                                                      |
|                               | MSP: 200                                                                              | MSP: 160                      | MSP: 150                                                                                                                                                      |
|                               | LSP: 300                                                                              | LSP: 240                      | LSP: 300                                                                                                                                                      |
|                               | SUPER: 400                                                                            | SUPER: 320                    | SUPER: 450                                                                                                                                                    |
|                               | ULTRA: 500                                                                            | ULTRA: 400                    | ULTRA: 600                                                                                                                                                    |
|                               | MEGA: 600                                                                             | MEGA: 480                     | MEGA: 750                                                                                                                                                     |
| Indicator                     | Output indicator: ON: red; OFF: off                                                   |                               | Laser indicator: Green LED<br>Output indicator: Bicolor LED (Red: ON; Green: OFF)<br>Level indicator:<br>Green x2, Red x1 (Displays detection margin 90~110%) |
| Ambient light                 | Incandescent lamp: 10,000 lux or less; Sunlight: 20,000 lux or less                   |                               |                                                                                                                                                               |
| Ambient temperature           | -10 to +50 °C (no freezing)                                                           |                               | -10 to +50 °C (no freezing)                                                                                                                                   |
| Ambient humidity              | 35 to 85% RH (no condensation)                                                        |                               |                                                                                                                                                               |
| Vibration resistance          | 10 to 55 Hz, Compound amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions |                               |                                                                                                                                                               |
| Vibration resistance          | 500 m/s², 3 times in each of the X, Y, and Z directions                               |                               |                                                                                                                                                               |
| Material                      | Housing: Polycarbonate; Lens cap: Glass; Cable: PVC                                   |                               |                                                                                                                                                               |
| Housing dimensions (L×W×H mm) | 31.2x13.1x6.4                                                                         | 37.7x13.1x6.4                 | 37×23×12.2                                                                                                                                                    |
| Weight                        | Approx. 70 g (including 2 m cable)                                                    |                               | Approx. 60 g (including 2 m cable)                                                                                                                            |

\* Standard detectors are white paper cards

Retroreflective Sensor Head

| Type                          | Retroreflective type                                                                                                                                       |                                           |                                            |
|-------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------|--------------------------------------------|
| Model                         | LA-NH4500                                                                                                                                                  | LA-NS3000                                 | LA-NS7000L                                 |
| Light source                  | Red laser (wavelength 640 nm)                                                                                                                              | Red laser (wavelength 650 nm)             |                                            |
| Laser class                   | IEC/JIS (class1)                                                                                                                                           |                                           |                                            |
| Beam spot size                | Approx. Φ1.5 mm<br>(at a distance of 1 m)                                                                                                                  | Approx. 2 x 2 mm<br>(at 500 mm or closer) | Approx. 2 x 10 mm<br>(at 500 mm or closer) |
| Detection distance<br>(m)     | HSP: 2.5                                                                                                                                                   | HSP: -                                    | HSP: -                                     |
|                               | MSP: 4                                                                                                                                                     | MSP: 0.7                                  | MSP: 2.5                                   |
|                               | LSP: 6                                                                                                                                                     | LSP: 2                                    | LSP: 5                                     |
|                               | SUPER: 7                                                                                                                                                   | SUPER: 3.5                                | SUPER: 8                                   |
|                               | ULTRA: 8                                                                                                                                                   | ULTRA: 5                                  | ULTRA: 10                                  |
|                               | MEGA: 10                                                                                                                                                   | MEGA: 6                                   | MEGA: 12                                   |
| Indicator                     | Laser indicator: Green LED<br>Output indicator: Bicolor LED (Red: ON; Green: OFF)<br>Level indicator: Green x2, Red x1 (Displays detection margin 90~110%) |                                           |                                            |
| Ambient light                 | Incandescent lamp: 10,000 lux or less; Sunlight: 20,000 lux or less                                                                                        |                                           |                                            |
| Ambient temperature           | -10 to +50 °C (no freezing)                                                                                                                                |                                           |                                            |
| Ambient humidity              | 35 to 85% RH (no condensation)                                                                                                                             |                                           |                                            |
| Vibration resistance          | 10 to 55 Hz, Compound amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions                                                                      |                                           |                                            |
| Vibration resistance          | 500 m/s², 3 times in each of the X, Y, and Z directions                                                                                                    |                                           |                                            |
| Material                      | Housing: Polycarbonate; Lens cap: Glass; Cable: PVC                                                                                                        |                                           |                                            |
| Housing dimensions (L×W×H mm) | 37×23×12.2                                                                                                                                                 | 43.1×19×13.2                              |                                            |
| Weight                        | Approx. 60 g (including 2 m cable)                                                                                                                         | Approx. 65 g (including 2 m cable)        |                                            |
| Reflector                     | N-6L (standard equipment)                                                                                                                                  |                                           |                                            |

\*1 LA-NS3000 and LA-NS7000L sensing heads do not have HIGH SPEED mode.

\*2 Sensor head mounting torque is recommended to be 0.16 - 0.22 N·m.

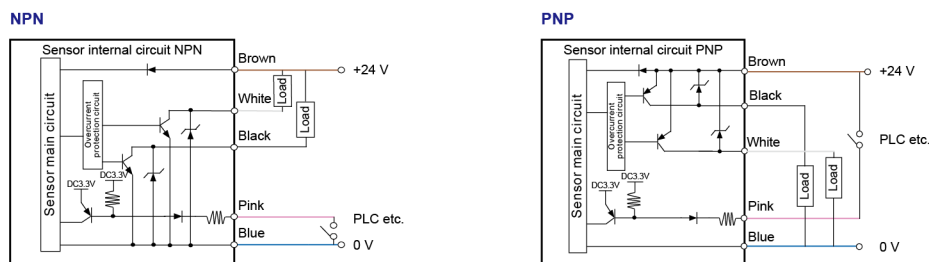
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## Amplifier

| Type                                           |         | Standard type                                                                                                                                                                                                 |                  |
|------------------------------------------------|---------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|                                                |         | Main module                                                                                                                                                                                                   | Expansion module |
| Model                                          | NPN     | LA-N11N                                                                                                                                                                                                       | LA-N12N          |
|                                                | PNP     | LA-N11P                                                                                                                                                                                                       | LA-N12P          |
|                                                | NPN/PNP | LA-N11                                                                                                                                                                                                        | LA-N12           |
| Control output                                 |         | 2 outputs                                                                                                                                                                                                     |                  |
| External input                                 |         | 1 input                                                                                                                                                                                                       |                  |
| Response time                                  |         | 80 us(H-SP)/250 us(M-SP)/500 us(L-SP)/1 ms(SUPER)/4 ms(ULTRA)/16 ms(MEGA)                                                                                                                                     |                  |
| Output switching                               |         | Light-ON/Dark-ON switching                                                                                                                                                                                    |                  |
| Timer function                                 |         | Timer off/OFF delay/ON delay/One-shot                                                                                                                                                                         |                  |
| Output capability                              |         | 2 outputs NPN open collector/PNP open collector<br>30 V or less, 100 mA or less (when used alone)/20 mA or less (when connecting expansion modules)<br>Residual voltage 1.5 V or less<br>L-ON/D-ON switchable |                  |
| Protection circuit                             |         | Reverse connection protection, output overcurrent protection and output surge protection                                                                                                                      |                  |
| Power voltage                                  |         | 10 to 30 VDC $\pm 10\%$ , Ripple voltage (P-P): 10% max.                                                                                                                                                      |                  |
| Power consumption                              | NPN     | 720 mW max. (30 mA max. at 24 V, 55 mA max. at 12 V)                                                                                                                                                          |                  |
|                                                | PNP     | 720 mW max. (30 mA max. at 24 V, 55 mA max. at 12 V)                                                                                                                                                          |                  |
| Number of modules that can be added            |         | Up to 15 expansion modules can be added to 1 main module                                                                                                                                                      |                  |
| Number of mutual interference prevention units |         | Maximum of 16 units                                                                                                                                                                                           |                  |
| Ambient temperature                            |         | -10 to +50 °C (no freezing)                                                                                                                                                                                   |                  |
| Ambient humidity                               |         | 35 to 85% RH (no condensation)                                                                                                                                                                                |                  |
| Vibration resistance                           |         | 10 to 55 Hz, Compound amplitude 1.5 mm, 2 hours in each of the X, Y, and Z directions                                                                                                                         |                  |
| Vibration resistance                           |         | 500 m/s <sup>2</sup> , 3 times in each of the X, Y, and Z directions                                                                                                                                          |                  |
| Material                                       |         | Polycarbonate                                                                                                                                                                                                 |                  |
| Housing dimensions (L×W×H mm)                  |         | 83.62×10.05×30.8                                                                                                                                                                                              |                  |
| Weight                                         |         | Approx. 70 g (including 2 m cable)                                                                                                                                                                            |                  |

Note: This product needs to be warmed up for about 10 minutes.

## I/O Circuit Diagrams

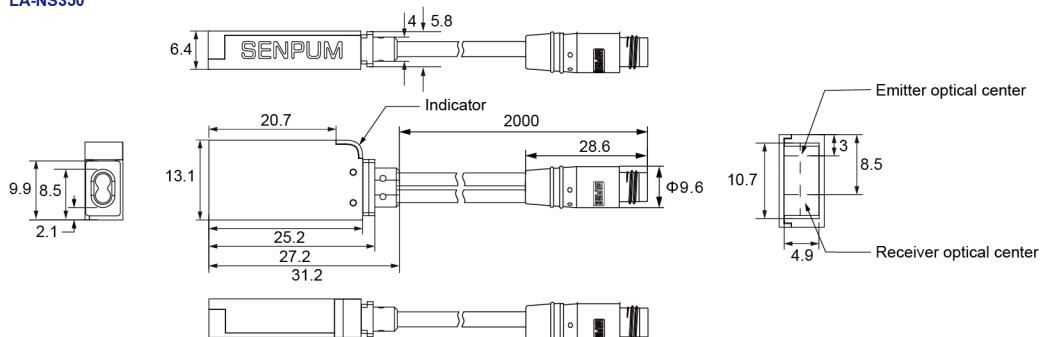


## Dimensions

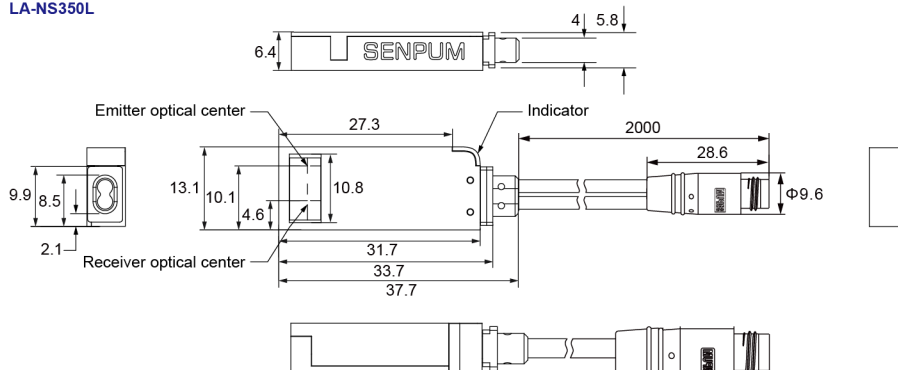
## Sensor Head

**LA-NS350**

Unit: mm



LA-NS350L



|        |
|--------|
| LA2-ZB |
| LA-ZB  |
| LO-Z   |
| LA-ZH  |
| LA-X   |
| LA-N   |
| LA-H   |
| LA2-S  |
| LA3-P  |
| LA-MR  |
| LA-T   |

# Laser Sensors

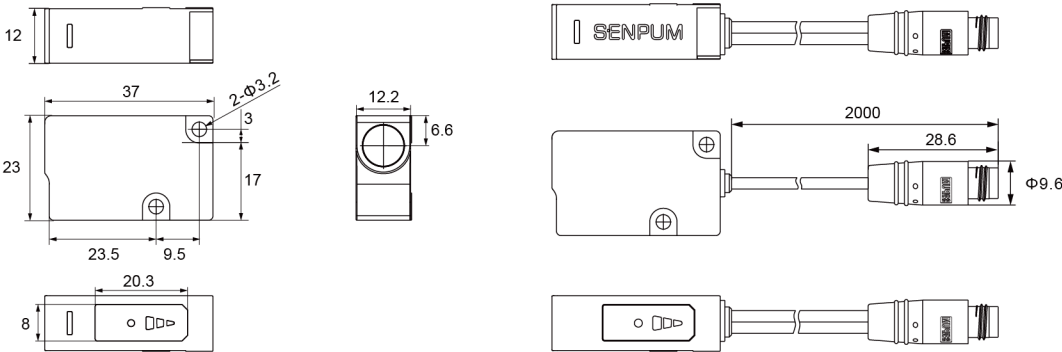
|                                        |
|----------------------------------------|
| Fiber Optic Sensors                    |
| Photoelectric Sensors                  |
| Color Sensors                          |
| Laser Sensors                          |
| Proximity Sensors                      |
| Precision Contact Sensors              |
| Area Sensors/<br>Safety Light Curtains |
| Laser Scanners                         |
| Digital Contact Sensors                |
| Laser Displacemen<br>Sensors           |
| Laser Micrometers                      |
| Confocal Displacement<br>Sensors       |
| Barcode Readers                        |
| AI Vision Sensors                      |
| RFID                                   |
| Infrared Temperature<br>Sensors        |
| Pressure Sensors                       |
| Flow Sensors                           |
| Magnetic Sensors                       |
| Ultrasonic Sensors                     |
| Magnetic Scales                        |
| Static Eliminators                     |



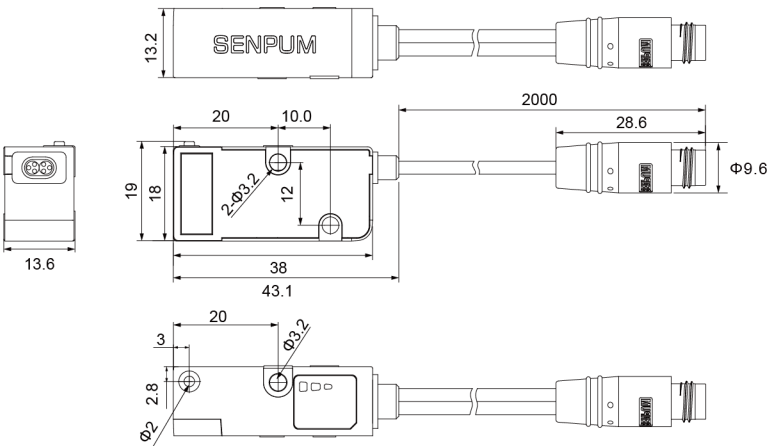
SEN-PUM  
0475

## LA-N High-Precision Digital Laser Sensor

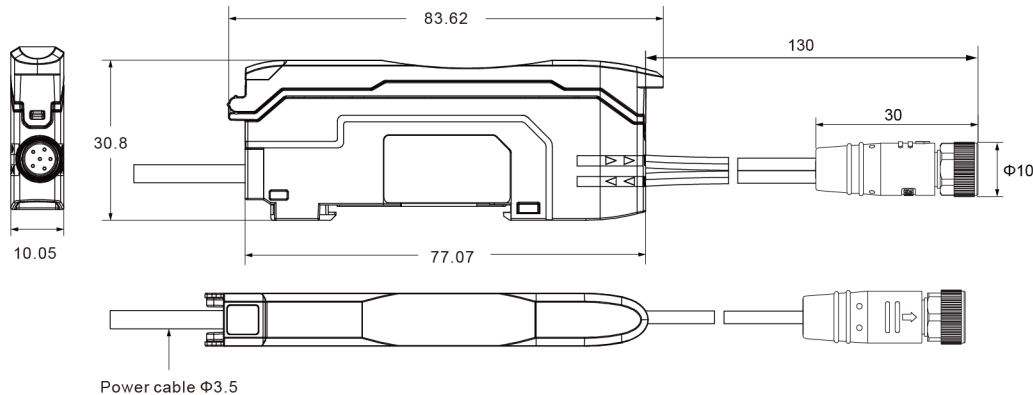
LA-NT750 / LA-NH4500



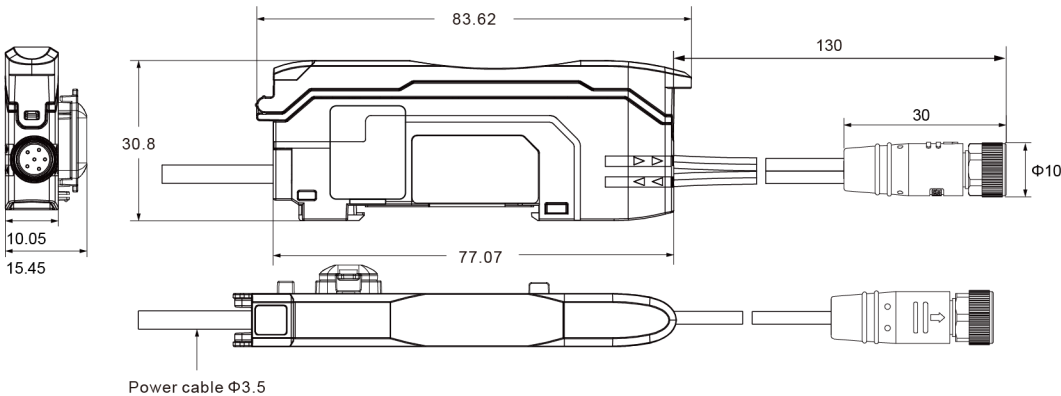
LA-NS3000 / LA-NS7000L



Amplifier  
LA-N11N / LA-N11P / LA-N11



LA-N12N / LA-N12P / LA-N12



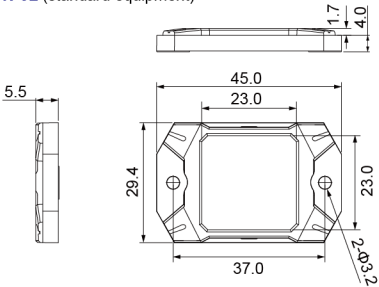
Ask SENPUM: +86-755-83330055

Laser Sensors

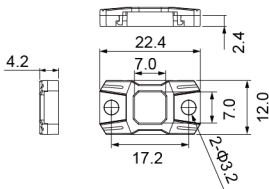
- LA2-ZB
- LA-ZB
- LO-Z
- LA-ZH
- LA-X
- LA-N
- LA-H
- LA2-S
- LA3-P
- LA-MR
- LA-T

Reflector

N-6L (standard equipment)

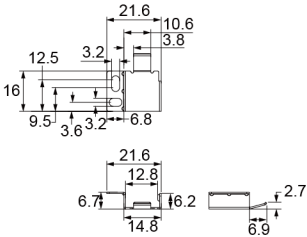


N-7 (sold separately)

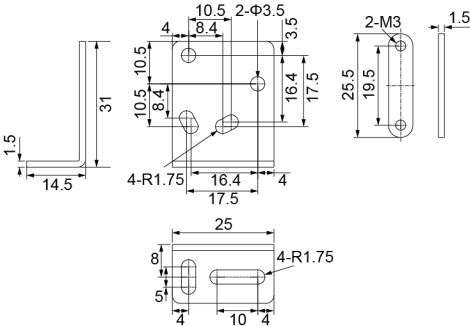


Bracket (sold separately)

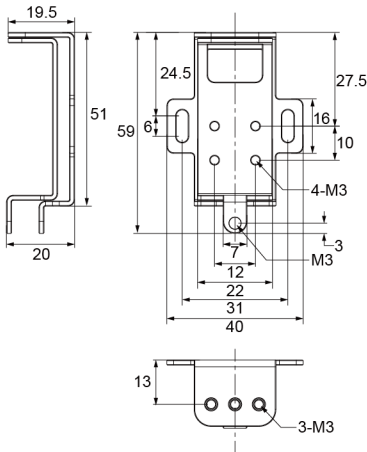
OW-LAN001



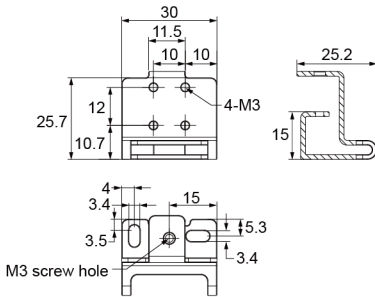
OW-LAN002



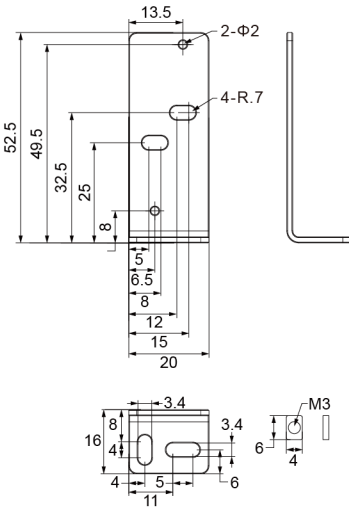
OW-LAN003



OW-LAN004



OW-LAN005



Reflective tape (sold separately)

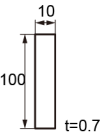
N-1010



N-1020



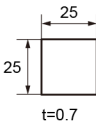
N-10100



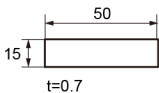
N-10250



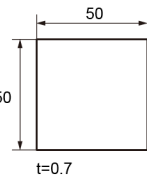
N-2525



N-5015



N-5050



- Fiber Optic Sensors
- Photoelectric Sensors
- Color Sensors

Laser Sensors

- Proximity Sensors
- Precision Contact Sensors
- Area Sensors/ Safety Light Curtains
- Laser Scanners
- Digital Contact Sensors
- Laser Displacement Sensors
- Laser Micrometers
- Confocal Displacement Sensors
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Static Eliminators

